

CLAIMS

1. Six-gear or seven-gear vehicle transmission (1, 30) having one starting and/or selector clutch (K1) the input side of which is connected with a drive shaft (2) of a prime mover and the output side with an input shaft (4), two countershafts (5, 6) upon which are turnably supported gear wheels designed as idler wheels (7, 8, 9, 10, 15, 16, 17, 34, 35, 36), gear wheels designed as fixed wheels (11, 12, 13, 14, 33, 37) non-turnably situated upon said input shaft (4) and in tooth contact with said idler wheels (7, 8, 9, 10, 15, 16, 17, 34, 35, 36), coupling devices (22, 23, 24, 25, 31, 32) non-turnably and axially movably supported upon said two countershafts (5, 6) and movable there by means of setting devices, the same as one output gear wheel (18, 19) fastened on the respective countershaft (5, 6) and in tooth contact with one toothing (20) on a differential transmission (21), wherein each two gear positions disposed in a shifting gate of an H- or multi-H-shifting gate (G1-G2; G3-G4; G5-G6; G7-RG) are associated in the transmission with two different coupling devices (22, 23, 24, 25, 31, 32), characterized in that of said fixed wheels (11, 12, 13, 14, 33, 37) situated upon said input shaft (4), at least two fixed wheels (12 or 37), 13, 14) are in tooth contact with each two idler wheels (8, 15; 35, 36; 9, 16; 10, 17).

2. Six-gear or seven-gear vehicle transmission according to claim 1, characterized in that said idler wheels (16 or 36) of the highest gear (G6 or G7) and said idler wheels (15 or 16) of the second highest gear (G5 or G6) are situated upon said second countershaft (6) while said idler wheels (9 or 35) of the third highest gear (G4 or G5) and said idler wheels (8 or 9) of the fourth highest gear (G3 or G4) are supported on said first countershaft (5).

3. Six-gear or seven-gear vehicle transmission according to claim 1 or claim 2, characterized in that said idler wheel (17) for the second gear (G2) and said idler wheel (10) for the reverse gear (RG) are situated upon different countershafts (5, 6) and can be driven by a common fixed wheel (14).

4. Six-gear vehicle transmission according to at least one of the preceding claims, characterized in that the gear wheels in the transmission, beginning from

the clutch (K1), are disposed as follows: reverse gear (RG) and second gear (G2), fourth gear (G4) and sixth gear (G6), third gear (G3) and fifth gear (G5), the same as first gear (G1).

5. Seven-gear vehicle transmission according to at least one of the preceding claims 1 to 4, characterized in that said gear wheels in the transmission, beginning from the clutch (K1), are disposed as follows: reverse gear (RG) and second gear (G2), fourth gear (G4) and sixth gear (G6), fifth gear (G5) and seventh gear (G7), the same as first gear (G1).

6. Seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that said countershafts (5, 6) are disposed paraxially or forming an angle with said input shaft (4).

7. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that the distances of said two countershafts (5, 6) from said input shaft (4) are different and that said output gear wheels (18, 19) upon said two countershafts (3, 4) form with said output toothing (20) on said differential transmission (21) reduction ratios of different magnitude.

8. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that said output wheels (18, 19) are situated on the ends of said two countershafts (5, 6) pointing to said clutch (K1).

9. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that said gearwheels of the third gear (G3) and of the fifth gear (G5) are different in the six-gear vehicle transmission (1) from those of the otherwise to a gear extent similarly built seven-gear vehicle transmission.

10. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that the fourth gear (G4) and the reverse gear (RG) with a common coupling device (23) are alternatively non-turnably connectable with said first countershaft (5), the same as the second gear (G2) and the sixth gear (G6) with one other common coupling device (25) are alternatively non-turnably connectable with said second countershaft (6).

11. Six-gear vehicle transmission according to at least one of the preceding claims, characterized in that the first gear (G1) and the third gear (G3) with a common coupling device (22) are alternatively non-turnably connectable with said first countershaft (5), the same as the fifth gear (G5) with one other coupling device (24) with said second countershaft (6).

12. Six-gear vehicle transmission according to at least one of the preceding claims, characterized in that the first gear (G1) and the fifth gear (G5) with a common coupling device (31) are alternatively non-turnably connectable with said first countershaft (5), the same as the third gear (G3) and the seventh gear (G7) with one other common coupling device (32) with said second countershaft (6).

13. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that said coupling devices (22, 23, 24, 25, 31, 32) are designed as positive fit dog clutches or as shifting sets.

14. Six-gear or seven-gear vehicle transmission according to claim 13, characterized in that each one of said shifting sets (22, 23, 24, 25, 31, 32) comprises one sliding sleeve axially movable upon the respective countershaft (5, 6) but non-turnably connected therewith, the same as synchronizer rings disposed to the right and/or left thereof.

15. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that said gear wheels (7, 17, 10) of the first gear (G1), of the second gear (G2) and/or of the reverse gear (RG) are situated in the area of the front sides of the transmission housing.

16. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that said gear wheels (7, 17, 10) of the first gear (G1), of the second gear (G2) and/or of the reverse gear (RG) are situated in the central area of the transmission.

17. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that said clutch (K1) is designed as powershift clutch, preferably as multi-disc clutch or as dry one-disc clutch.

18. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that one separate starting element,

preferably a hydrodynamic torque converter, is situated according to driving technique between said drive shaft (2) of the prime mover and the input side of said clutch (K1).

19. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that one torsional vibration damper is located between said clutch (K1) and said drive shaft (2) of the prime mover.

20. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that said two countershafts (5, 6) and/or at least said input shaft (4) are connected with a non-wearing transmission brake (retarder).

21. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that on said two countershafts (5, 6) and/or on said input shaft (4) at least one other gear wheel is situated for driving auxiliary units.

22. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that with said countershafts (5, 6) and/or said input shaft (4) at least one electric generator can be driven.

23. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that one generator can be driven from the input side of said clutch (K1).

24. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that said differential transmission (21) is designed as power divider differential transmission or as length divider differential transmission.

25. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that the setting device for actuating said coupling devices can be actuated manually or with servo assistance.

26. Six-gear or seven-gear vehicle transmission according to claim 25, characterized in that said setting devices actuatable with servo assistance have piston-cylinder systems which can be actuated by a hydraulic or pneumatic pressure medium.

27. Six-gear or seven-gear vehicle transmission according to at least one of the preceding claims, characterized in that said setting device actuatable manually and/or with servo assistance comprises one mechanical conversion device (Fig. 3) which converts a selector lever movement in a shifting gate of an H- or multi-H shifting gate from one gear position to the next gear position (G1-G2; G3-G4; G5;G6; G7-RG) in actuation movements for two shifting sets (22, 23, 24, 25, 31, 32) in said transmission (1, 30).